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A Progress Report

on selected aspects of four Ohio milk distribution systems

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A PROGRESS REPORT ON SELECTED ASPECTS OF FOUR OHIO MILK DISTRIBUTION SYSTEMS

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This publication is to report the findings of some of the basic marketing characteristics of the Cincinnati, Toledo, Youngstown and Canton markets during the 1955-56 period when studied. The Akron, Cleveland, Dayton and Ironton markets were surveyed during 1954-55 and the preliminary results of this study may be found in research circular 29.[1] Further publications dealing with various aspects of milk distribution systems will be issued as the analysis is completed.

Purpose of this Project

This publication is one of several which result from a four year study by the Ohio Agricultural Experiment Station on Milk Distribution systems within Ohio. The state of Ohio has within its boundaries many diverse systems of milk distribution. They differ in many aspects including container sizes offered, methods of pricing and levels of milk prices, container types offered and relative amounts sold through stores and by home delivery. The markets also differ in gross spreads between the retail price and the farmer's price for milk. This study is primarily interested in what the differences are and more specifically what relationships exist, if any, where these differences have occurred.

The methodology employed herein has been reported in research circular 29.[2]

Markets and Market Differences

The market as used here is interpreted to include the metropolitan area and not the city proper nor the marketing area as defined by federal order. The Cincinnati market would include Cincinnati proper, Norwood, Sharonville, Lockland, Montgomery, Reading, Mt. Healthy, the major part of Hamilton County, Ohio and parts of

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[1]Mitchell, Glen H. and Baumer, Elmer F., **An Interm Report on Milk Marketing Distribution Systems in Ohio.** Ohio Agricultural Experiment Station, Wooster, Ohio; March 1956.

[2]Ibid.

Campbell and Kenton County, Kentucky. Youngstown would include Youngstown proper, Struthers, Girard, Hubbard, Boardman and much of Mahoning County. The market area was defined by (1) the definition of the metropolitan area by either the U. S. census or the local chamber of commerce and/or (2) the area being urbanized and reasonably contigous to the principle city. Generally, the area was serviced by the same dairies. Under this definition, Massillon, North Canton, and part of Stark County is considered part of the Canton Market. The Toledo market includes Maumee, Roseford, Perrysburg and Sylvania.

TABLE 1.—Population, Average Family Size and Median Family Income of the Canton, Cincinnati, Toledo and Youngstown Markets, 1950

City	Population	Average family size	Median income
Canton	173,917	3.32	3,069
Cincinnati	813,292	3.11	2,882
Youngstown	298,051	3.55	3,273
Toledo	364,344	3.23	3,556

Source: U. S. Cenus, 1950.

These four markets differ in total population, size of family and the median family income between cities.

Additional Market Facts

Employment and individual income was at a relatively high level during the time of research in all markets.

Some two-quart and gallon containers are found in all markets. Paper and glass in both one quart and two quart sizes are found in all cities. Gallon glass jugs are sold only through stores in all markets. The gallon jug makes up an extremely small amount of the total milk sold in Toledo and Cincinnati. Paper and glass in the one and two quart containers are home delivered and sold through stores in all cities. However, usually one type—either paper or glass—tends to dominate a particular method of selling.

In Canton, Cincinnati, and Youngstown, most dairies priced homogenized milk one cent a quart higher than standardized milk. In some cases such as Youngstown the product in paper is often priced higher than when in glass. It is interesting to note that in most cities the lowest priced milk was not being sold by the large chain stores.

Table 2 shows the range of prices that were available in the markets during the time of the survey.

The exact prices paid for various types, quantity and kinds of milk are difficult to ascertain due to the multiplicity of types and sizes of containers, product differentiation, discounts offered, range of prices for the same product, and the proportion of milk sold by various types of outlets and many other factors.

TABLE 2.—Range of Announced Prices for Regular Standardized Milk During the Time of the Study in Four Ohio Cities According to Different Methods of Delivery and Size of Container, 1955-1956*

City	One Quart		Two Quart		Gallon store	Date of study
	Store	Home	Store	Home		
	Cents		Cents		Cents	
Canton[3]	17–22	22	33–45	40	65	Feb. '56
Cincinnati[3]	21–24	22–24	40–42	44–47	74	Nov. '55
Toledo	19–22	22	34–44	44	79	Jan. '56
Youngstown[3]	18–23	23–24	33–40	39–42	71	Mar. '56

*Not adjusted for Discount or Differences in Price between homogenized and standardized milk.

No formal or announced type of universal home delivered milk discounts existed in any of the markets with the exception of Canton. In Canton, there was an announced discount by a majority of the dairies on retail routes of 1 cent on 60 quarts or more and 2 cents on 90 quarts or more.

Table 3 shows the estimated weighted average price of milk purchased at the time of the study by the families in the sample. The effect of discounting or the effect of differences in prices between homogenized and standardized milk was not taken into consideration.

Canton, Cincinnati and Youngstown have three day per week home delivery. Toledo has every other day home delivery.

Place of Purchase

A significant variation exists in the percent of milk purchased at home and at store between the four cities.

[3]Homogenized priced 1¢ a qt. higher than standardized milk by most dairies.

TABLE 3.—Weighted Average Price Paid for Standardized Milk per Quart in Four Ohio Cities at the Time of the Study, 1955-56*

City	Date	Cents
Canton	February 1956	19.77
Cincinnati	November 1955	22.45
Toledo	January 1956	21.11
Youngstown	March-April 1956	19.83

*Not adjusted for retail discounts or for differences between homogenized and standardized milk.

In all cities, at least one-third of the milk was sold through stores. Home delivery predominated in Cincinnati and Toledo. Youngstown has over two-thirds of its milk sold through stores. In Canton, home delivery dominates over store delivery but only slightly so (54% to 46%).

TABLE 4.—Percent of Total Fluid Milk Purchases Home Delivery and Through Stores in Four Ohio Cities, 1955-56

Home	City	Store
54	Canton	46
62	Cincinnati	38
64	Toledo	36
31	Youngstown	69

Type of Container (Paper–Glass)

Glass is the most often used type of container in all four markets for milk sold for home consumption. Canton is the leading glass used on a percentage basis with a large amount of milk sold in glass half gallons both at home and at store and also a large volume sold in glass gallons. Toledo sells approximately one-third of its milk in paper primarily with a large volume sold in two quart paper containers at the store. In Cincinnati and Toledo, over 40 percent of the milk sold was packaged in one quart glass and home delivered.

Percent of Milk Sold by Size of Container

Large variation existed between markets in the percent of milk sold in the different sizes of containers. Seventy-four percent of the milk sold in Youngstown was in two-quart containers whereas in Toledo 74 percent of the milk sold was in one quart containers.

TABLE 5.—Volume of Milk Sold by Type of Container in Four Ohio Cities, 1955-56

Glass	City	Paper
Percent		Percent
82	Canton	18
75	Cincinnati	25
66	Toledo	34
70	Youngstown	30

No gallon jugs are sold within the city limits of Cincinnati, Toledo or Canton. However, gallon jugs are sold in the Canton market where 13 percent of the milk is sold in this size container.

Whereas in a previous study made in Akron, Cleveland, Ironton and Dayton, the dominant container in all markets was the one quart package; the two quart container was dominant in both the Youngstown and Canton market. The percent of milk sold in two quarts in Youngstown was roughly three times that of milk sold in two quart containers in Toledo. Conversely, roughly three times as large a percent of the total milk is sold in one quart packages in Cincinnati and Toledo as in Youngstown. In Toledo, approximately 61 percent of the total milk is sold home delivered in one quart containers.

TABLE 6.—Percent of Fluid Milk Sales by Type of Container in Four Ohio Cities, 1955-1956

City	Gallon	Container Sizes	
		2 Quart*	1 Quart
Canton	13	54	33
Cincinnati	1	34	65
Toledo	1	25	74
Youngstown	4	74	22

*Includes two connected single quarts sold at the half gallon price.

Average Size of Family by Size of Container Purchased

In general, families purchasing in larger sizes of containers were families with larger numbers of persons. As Table 7 indicates, the only exception to this is Youngstown where families buying in the two-quart container had a larger average family size than the families buying milk

in the gallon jug. It should be pointed out that if the consumer purchases milk in any size of container that they would be included within that size of container category. Hence if the purchaser bought milk in three sizes of containers, they would be included in all three categories. However, only about ten percent of the families buy more than one type of container in Cincinnati and Toledo. In Canton and Youngstown, 12.5 percent and 17.3 percent respectively of the families purchasing milk buy in more than one size of container. Families who purchased no regular fluid milk at home average less than two persons per family in all markets.

TABLE 7.—Average Size of Family Purchasing Milk in Various Sizes of Containers in Four Ohio Cities, 1955-1956

City	Gallon	Container Sizes	
		2 Quart	1 Quart
Canton	4.00	3.95	3.30
Cincinnati	4.42	3.95	3.39
Toledo	4.42	3.96	3.25
Youngstown	3.96	4.02	3.31

Average Fluid Milk Consumption per Capita

All four cities studied have a higher per capita consumption of fluid milk[4] than the national average. Milk consumed both inside the home and away from home are included in this per capita consumption picture.

There are significant differences in per capita milk consumption between the various markets.[5] The average per capita consumption in Youngstown is roughly one-fifth larger than Cincinnati's per capita milk consumption.

The Youngstown per capita consumption of 396 pounds is approximately thirty percent higher than the national average of 303 pounds in 1955.[6] Canton and Toledo are 24.4 percent and 20.7 percent respectively over the national per capita consumption average. Cincinnati is 6.6 percent over the national average.

[4]Fluid milk as used here includes regular, homogenized and skim milk. Also buttermilk, chocolate milk and special milks but not cream, ice cream, cottage cheese or other processed products.

[5]Tested by chi-square at the 5% level.

[6]The national average fluid milk consumption in 1955 of 303 pounds is derived from the Dairy Situation, U. S. Dept. of Agr., Washington D. C., November 21, 1955.

TABLE 8.—Average Fluid Milk Consumption per Person in Four Ohio Cities, 1955-1956

Pints per Day	City	Annual Pounds
.962	Canton	377
.824	Cincinnati	323
.933	Toledo	366
1.009	Youngstown	396

Per Capita Consumption by Type of Delivery

In all markets except Youngstown, families who purchases milk both at home and at store bought more milk than those who purchased only at home or at store. The more milk they use the oftener they have to get it. Families who bought at the store and at home consumed over 24 percent more than the families that bought at home exclusively in Toledo, over 31 percent in Cincinnati and over 15 percent in Canton. In Youngstown they were almost identical.

Fourteen percent or less of the families purchasing milk in Cincinnati, Canton and Youngstown buy from both sources. In Toledo, one-fifth or 20 percent of the families bought from the store and at the home.

In Canton and Youngstown, the families who purchased exclusively at the store had a higher per capita consumption than did those families purchasing 100 percent home delivered. The reverse was true in Cincinnati and Toledo. The difference in per capita consumption between the two categories is slight with the exception of Youngstown. The families obtaining milk entirely at the store in Youngstown drink over 15 percent more per person than do the families purchasing exclusively at the home.

TABLE 9.—Average per Capita Consumption of Fluid Milk, Purchased Both Home Delivered and at Store, 1955-1956

(Pints)

City	Store Only	Home Only	Both
Canton	.94	.90	1.04
Cincinnati	.77	.80	1.05
Toledo	.86	.89	1.11
Youngstown	1.04	.90	1.02

Average Family Size by Type of Delivery

Table 10 illustrates that the average family size is larger in the group that purchases both at store and at home. The families who purchase only at home are larger families than those who buy entirely at the store in Cincinnati, Toledo and Canton. However; in Youngstown, the families who obtained their milk completely at the store have larger families than those who make their purchase exclusively at home.

Daily per Capita Consumption of Fluid Milk by Size of Container

As the size of container used increased, the per capita consumption tended to rise. This was true in all cases except in Cincinnati where the gallon jug users have the smallest per capita consumption. The number of families using gallon jugs in Cincinnati was only six. In all other cases, the families using the gallon jug had a larger per capita consumption than those buying the smaller two containers. In all markets, the families buying in the two quart containers have a larger per capita consumption than those purchasing milk in the one quart package.

TABLE 10.—Average Family Size According to Type of Milk Delivery in Four Ohio Cities, 1955-56

City	All Store	All Home	Home and Store
Canton	3.38	3.59	4.01
Cincinnati	3.22	3.40	4.00
Toledo	3.19	3.30	4.14
Youngstown	3.70	3.41	4.04

There are differences in per capita consumption as the size of containers vary. In Youngstown, the families purchasing in the gallon jug are using roughly one-third more milk per person than the families using the two quart container who in turn had a per capita consumption of approximately one-sixth more than those families using the one quart container. Toledo and Canton exhibit the same tendency.

Daily per Capita Consumption by Family Income

The following chart illustrates the daily per capita milk consumption by family income in Canton, Cincinnati, Toledo and Youngstown.

During the time of the study and within the income scale used, per capita consumption tended to increase as income went up. The rate of increases tends to diminish as income rises to the middle categories and decreases in the upper income group (with the exception of Toledo).

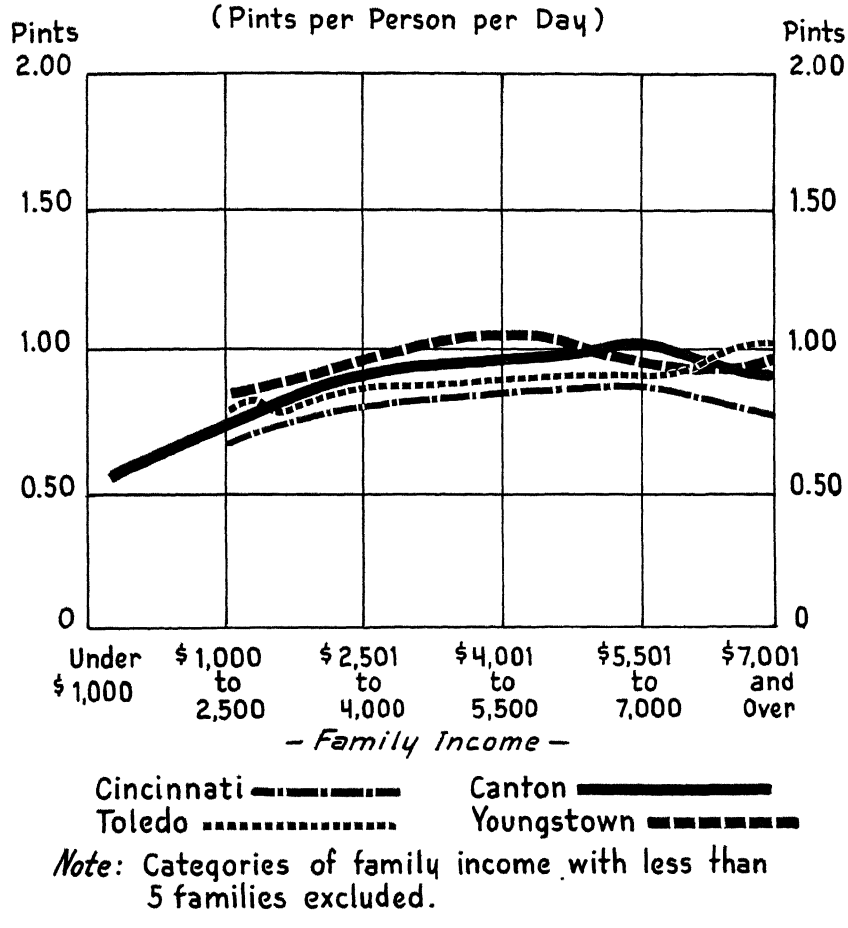

Chart 1.—Mean daily per capita consumption of milk, by family income as given, 4 selected Ohio milk markets 1955-1956.

Youngstown's per capita consumption is higher in all income groups other than the highest income group. Cincinnati tends to be the lowest in all cases. Factors such as age and family composition may partially explain the variations between income groups and markets.

General

This research circular serves as progress report on a few selected factors in the Canton, Cincinnati, Toledo and Youngstown milk marketing distribution systems. This publication serves to relate some of the intermediate findings in this four year study. Further research is underway on the factors enumerated herein and their individual and joint effects. Subsequent publications will be issued as this analysis is completed.